

What is claimed is:

1. A shadow mask frame assembly of a flat cathode ray tube, comprising:

a shadow mask including a plurality of strips formed at a main body in a vertical direction by being separated by a predetermined distance by slits and a plurality of bridges forming slots by connecting neighboring strips and sectioning the slits, the slots including a first slot group and a second slot group with the slots, the first slot group having a wider interval between the bridges than the second slot group, the slots partially passing through thermions emitted from an electron gun of said flat cathode ray tube while the remaining thermions colliding against the strips and the bridges;

and

a frame supporting said shadow mask, said frame comprising:

a first support member and a second support member secured at a long side portion of said shadow mask; and

a first elastic member and a second elastic member, said first elastic member and said second elastic member each having two end portions, each one of said two end portions coupled to either one of said first or second support members, said first and second elastic members applying a tension force to said shadow mask.

2. The assembly as claimed in claim 1, with at least one second slot group forming at said upper and lower portions of said shadow mask in a vertical direction while the first slot group is being formed between the two second slot groups in the vertical direction.

1 3. The assembly as claimed in claim 1, with the first slot group being formed at the
2 central portion of the main body in the vertical direction.

1 4. The assembly as claimed in claim 2, with the number of the slots forming the first slot
2 group in the vertical direction being one.

1 5. The assembly as claimed in claim 3, with the number of the slots forming the first slot
2 group in the vertical direction being one.

1 6. The assembly as claimed in claim 4, with the number of the slots forming the second
2 slot group in the vertical direction being at least three.

1 7. The assembly as claimed in claim 6, with the length of each of the slots forming the
2 second slot group being substantially the same.

1 8. The assembly as claimed in claim 7, with the length of each of the slots of the second
2 slot groups in the vertical direction and the length of the slots of the first slot group in the vertical
3 direction being substantially the same.

1 9. The assembly as claimed in claim 7, with the sum of the lengths of the slots of the
2 second slot group in the vertical direction being substantially the same as the length of the slots of

the first slot group in the vertical direction.

10. The assembly as claimed in claim 1, with a plurality of the second slot groups and the first slot groups being formed in the vertical direction accommodating each of the first and second groups appearing alternately.

11. The assembly as claimed in claim 1, with the first slot group being formed at the middle portion in the vertical direction and the second slot group being formed at peripheries at both sides of the first slot group.

12. A shadow mask frame assembly of a flat cathode ray tube, comprising:
a shadow mask including a plurality of strips formed at a main body in a vertical direction by being separated a predetermined distance by slits and a plurality of bridges forming slots by connecting neighboring strips and sectioning the slits, a portion where the bridges are formed and a portion where the bridges are not formed are alternately disposed in a horizontal direction;
first and second support members secured at a long side portion of said shadow mask; and
elastic members having either end portion secured to each of said first and second support members for applying a tension force to said shadow mask.

13. The assembly as claimed in claim 10, with the intervals between the bridges in the vertical direction being substantially the same.

1 14. A method of assembling a shadow mask frame assembly, comprising the steps of:

2 placing a shadow mask on first and second support members, said first and second support
3 member having a secured portion and a reinforcement portion, said shadow mask being supported
4 by said secured portion and said reinforcement portion of said first and second support members;

5 coupling said first support member to one end of a first elastic member and a second elastic
6 member made of a resilient material;

7 coupling said second support member to a second end of said first elastic member and said
8 second elastic member;

9 pressing said first and second support members and said first and second elastic members in
10 directions close to each other, said first and second elastic members being elastically deformed;

11 coupling a long side portion of said shadow mask to said secured portions of said first and
12 second secured members; and

13 removing the pressure applied to said first and second support members allowing the tension
14 force from said first and second elastic members to be applied to said shadow mask.

1 15. The method of claim 14, with said shadow mask further comprising:

2 forming a plurality of strips in a column in a vertical direction on a main body of said shadow
3 mask, the strips not passing electron beams emitted from an electron gun of a flat cathode ray tube;

4 forming a plurality of slits in a column and separating the column of said strips, the plurality
5 of slits passing electron beams emitted from said electron gun of said flat cathode ray tube; and

6 forming a plurality of bridges separating the column of the plurality of slits, said bridges
7 preventing the passing of electron beams from said flat cathode ray tube through said shadow mask,
8 said plurality of bridges forming slots by connecting adjacent strips and sectioning the slits, said slots
9 arranged in the vertical direction, the slots being arranged in a first slot group and a second slot
10 group, the first slot group having slots with a wider interval between bridges than the second slot
11 group.

1 16. The method of claim 15, with the first slot group formed at a central portion of said
2 main body of said shadow mask in the vertical direction.

3 17. The method of claim 16, with the second slot group formed at the upper or lower
4 portion of the main body.

5 18. The method of claim 15, with the number of slots forming the first slot group being
6 one while the number of slots forming the second slot group being at least three.

7 19. The method of claim 18, with the length of the slots of the second slot group being
8 formed uniformly.

9 20. The method of claim 15, with the length of the first slot group being approximately
10 equal to a length of a slot in the first slot group.

1 21. The method of claim 15, with the slots being symmetrically formed with respect a
2 median line cutting across the middle of the column of slots, said bridges being formed at
3 approximately identical intervals on either side of the median line.

1 22. The method of claim 15, with the interval length between bridges at the periphery of
2 an upper and lower portions of said shadow mask being less than the interval length between the
3 bridges at the center of said shadow mask accommodating a greater rigidity of the strips.

1 23. The method of claim 15, with a length of the first slot group in the middle of the
2 shadow mask being determined according to the amount of the tension force applied to said shadow
3 mask and to the size of a panel of said cathode ray tube.

1 24. The method of claim 15, further comprising of forming a plurality of second slot
2 groups and a plurality of first slot groups alternately in a vertical direction.

1 25. The method of claim 15, with the first slot group being formed in the middle portion
2 of the shadow mask in a horizontal direction while the second slot group being formed at the
3 peripheries of both sides of said shadow mask in the horizontal direction.

1 26. The method of claim 15, with a set of first columns of said slits having bridges

alternating with a set of second columns of a single slit with no bridges.

27. The method of claim 15, with the width of said bridges being formed to accommodate a latent image not being displayed when the electron beam from the electron gun passes through adjacent slots sectioned by the bridges and landing on a fluorescent film.

28. The method of claim 15, further comprising of positioning the bridges on said shadow mask according to the material of said shadow mask and a tension force against said shadow mask.

29. The method of claim 15, with said first and second support members being separated a predetermined distance and said secured portion and said reinforcement portion forming an L shape.

30. A shadow mask frame assembly, comprising:

a shadow mask, comprising:

a plurality of strips forming columns in a vertical direction on a main body of said shadow mask, the strips not passing electron beams emitted from an electron gun of a flat cathode ray tube;

a plurality of slits forming columns and separating the columns of said strips, the plurality of slits passing electron beams emitted from said electron gun of said flat cathode ray tube; and

9 a plurality of bridges sectioning the columns of the plurality of slits, said
10 bridges preventing the passing of electron beams from said flat cathode ray tube through said shadow
11 mask, said plurality of bridges forming slots by connecting adjacent strips and sectioning the slits,
12 said slots arranged in columns in the vertical direction, the slots being arranged in a first slot group
13 and a second slot group, the first slot group having slots with a wider interval between bridges than
14 the second slot group; and
15 a frame supporting said shadow mask.

31. The apparatus of claim 30, with said frame comprising:

2 a first support member and a second support member secured at a long side portion
3 of said shadow mask; and
4 a first elastic member and a second elastic member, said first elastic member and said
5 second elastic member each having two end portions, each one of said two end portions coupled
6 to either one of said first or second support members, said first and second elastic members applying
7 a tension force to said shadow mask.

1 32. The apparatus of claim 30, with the first slot group forming at a central portion of said
2 main body of said shadow mask in the vertical direction.

1 33. The apparatus of claim 32, with the second slot group formed at the upper or lower
2 portion of the main body of said shadow mask.

1 34. The apparatus of claim 30, with the number of slots forming the first slot group being
2 one while the number of slots forming the second slot group being at least three.

1 35. The apparatus of claim 30, with the length of the slots of the second slot group being
2 formed uniformly.

1 36. The apparatus of claim 30, with the length of the first slot group being approximately
2 equal to a length of a slot in the first slot group.

1 37. The apparatus of claim 30, with the slots being symmetrically formed with respect
2 a median line cutting across the middle of the columns of slots, said bridges being formed at
3 approximately identical intervals on either side of the median line.

1 38. The apparatus of claim 30, with the interval length between bridges at the periphery
2 of upper and lower portions of said shadow mask being less than the interval length between the
3 bridges at the center of said shadow mask accommodating a greater rigidity of the strips.

1 39. The apparatus of claim 30, with a length of the first slot group in the middle of the
2 shadow mask being determined according to the amount of the tension force applied to said shadow
3 mask and to the size of a panel of said cathode ray tube.

1 40. The apparatus of claim 30, further comprising a plurality of second slot groups and
2 a plurality of first slot groups alternately formed in a vertical direction.

1 41. The apparatus of claim 30, with the first slot group being formed in the middle
2 portion of the shadow mask in a horizontal direction while the second slot group is formed at the
3 peripheries at both sides of said shadow mask in the horizontal direction.

1 42. The apparatus of claim 30, with columns of said slits having bridges alternating with
2 columns of a single slit with no bridges on said shadow mask.

1 43. The apparatus of claim 30, with the width of said bridges being formed to
2 accommodate a latent image not being displayed when the electron beam from the electron gun
3 passes through adjacent slots sectioned by the bridges and lands on a fluorescent film.

1 44. The apparatus of claim 30, with the bridges positioning on said shadow mask
2 according to the material of said shadow mask and a tension force against said shadow mask.

1 45. The apparatus of claim 31, with said first and second support members being
2 separated a predetermined distance and said secured portion and said reinforcement portion forming
3 an L shape.